

REMARKS

The following remarks are provided in response to the Office Action mailed January 11, 2006 in which the Examiner:

- rejected claims 1, 2, 4-8, 13, 14 and 16-21 under 35 U.S.C. §102(b) as being anticipated by US 4,445,364 to Sasa (hereinafter Sasa).
- rejected claims 1-4, 6-8, 13-15 and 17-20 under 35 U.S.C. §102(e) as being anticipated by US 6,979,647 to Bojkov et al. (hereinafter Bojkov).
- rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Sasa.
- rejected claim 15 under 35 U.S.C. §103(a) as being unpatentable over Sasa in view of Bojkov.
- rejected claims 1-8 and 13-21 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 15-19 of US 6,974,764.
- provisionally rejected claims 1-8 and 13-21 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending US Application No. 10/704,498.

The applicants respectfully request reconsideration of the above referenced patent application for the following reasons:

Claim 1, 2, 4-8, 13, 14 and 16-21 rejection under 35 U.S.C. §102(b)

Claims 1, 2, 4-8, 13, 14 and 16-21 are rejected under 35 U.S.C. §102(b) as being anticipated by Sasa. The applicants herein cancel claims 1, 2 and 4-8 without prejudice. The applicants herein amend independent claims 13 and 18 (on which claims 14, 16-17

and 19-21 depend) and respectfully request reconsideration of claims 13-14 and 16-21 in view of the amendments and the following arguments.

In claims 13-14 and 16-21, the applicants teach and claim a method comprising depositing a metal-containing film above a substrate, wherein the metal-containing film comprises two or more metals. A photoresist layer is then deposited above the metal-containing film. The photoresist layer is subsequently patterned such that a desired portion of the metal-containing film is masked and an undesired portion of the metal-containing film is exposed. Finally, the undesired portion of the metal-containing film is removed with a solution comprising two or more chelating agents, wherein the two or more chelating agents do not impair a second metallic film that does not contain the two or more specific metals contained in the metallic film.

As the Examiner points out, Sasa discloses a method for forming a metallic image, wherein a metallic thin layer is formed over a support and a light sensitive resin layer or image-wise etching resistant layer is formed, exposed and developed. Portions of the metallic layer not covered with the resist will be dissolved by etching (col. 2, lines 8-44). A treating solution comprising a metal chelate is employed to etch the exposed portions of the metallic layer (col. 4, lines 42-68). However, Sasa does not disclose a method wherein a metallic layer comprising two or more metals is etched with a solution comprising two or more chelating agents, while not impairing a second metallic layer, as taught by the applicants.

Claim 1-4, 6-8, 13-15 and 17-20 rejection under 35 U.S.C. §102(e)

Claims 1-4, 6-8, 13-15 and 17-20 are rejected under 35 U.S.C. §102(e) as being anticipated by Bojkov. The applicants herein cancel claims 1-4, 6-8 and 15 without prejudice. The applicants herein amend independent claims 13 and 18 (on which claims 14, 17 and 19-20 depend) and respectfully request reconsideration of claims 13-14 and 17-20 in view of the amendments and the following arguments.

In claims 13-14 and 17-20, the applicants teach and claim a method comprising depositing a metal-containing film above a substrate, wherein the metal-containing film comprises two or more metals. A photoresist layer is then deposited above the metal-containing film. The photoresist layer is subsequently patterned such that a desired portion of the metal-containing film is masked and an undesired portion of the metal-containing film is exposed. Finally, the undesired portion of the metal-containing film is removed with a solution comprising two or more chelating agents, wherein the two or more chelating agents do not impair a second metallic film that does not contain the two or more specific metals contained in the metallic film.

As the Examiner points out, Bojkov discloses a method for chemical etch control of noble metals in the presence of less noble metals. The removal of a first metal from the presence of a second metal is accomplished by placing the first and second metals in an oxidizing etchant solution containing a chelating agent which selectively forms a complex with the first metal (col. 1, line 64 – col. 2, line 6). Resist layer 201 defines the opening which exposes the metal seed layer (col. 3, lines 63-67). The wafers are immersed in an oxidizing etchant solution which is usually a highly acidic bath. A

chelating agent is added to the solution which binds the seed ions into chemical complexes. Depending on the specific metal in the seed layer, one can select a chelating agent specific for the specific metal (col. 5, lines 13-67). However, Bojkov does not disclose a method wherein a metallic layer comprising two or more metals is etched with a solution comprising two or more chelating agents, while not impairing a second metallic layer, as taught by the applicants.

Claim 3 rejection under 35 U.S.C. §103(a)

Claim 3 is herein canceled without prejudice.

Claim 15 rejection under 35 U.S.C. §103(a)

Claim 15 is herein canceled without prejudice.

Claims 1-8 and 13-21 rejection for nonstatutory obviousness-type double patenting

Claims 1-8 and 13-21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 15-19 of US 6,974,764. Claims 1-8 and 15 are herein cancelled without prejudice. Claims 14, 16 and 17 are dependent on independent claim 13. In view of amended independent claim 13 discussed above, the applicants request that claims 13-14 and 16-17 be reconsidered as they are now patentably distinct over claims 15-19 of US 6,974,764. Claims 19-21 are dependent on independent claim 18. In view of amended independent claim 18 discussed above, the applicants request that claims 18-21 be reconsidered as they are now patentably distinct

over claims 15-19 of US 6,974,764.

Claims 1-8 and 13-21 rejection for nonstatutory obviousness-type double patenting

Claims 1-8 and 13-21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending US Application No. 10/704,498. Claims 1-8 and 15 are herein cancelled without prejudice. Claims 14, 16 and 17 are dependent on independent claim 13. In view of amended independent claim 13 discussed above, the applicants request that claims 13-14 and 16-17 be reconsidered as they are now patentably distinct over claims 1-20 of copending US Application No. 10/704,498. Claims 19-21 are dependent on independent claim 18. In view of amended independent claim 18 discussed above, the applicants request that claims 18-21 be reconsidered as they are now patentably distinct over claims 1-20 of copending US Application No. 10/704,498.

New Claims 22-31

The applicants herein add new claims 22-31 and submit that they have the right to claim the invention as set forth in the new claims.

Claim 22 and 23 are dependent on independent claim 13. In view of amended independent claim 13 discussed above, the applicants request that claims 22 and 23 be considered. Claim 24 and 25 are dependent on independent claim 18. In view of amended independent claim 18 discussed above, the applicants request that claims 24 and 25 be considered.

With respect to new claims 26-31, the applicants teach and claim a method for forming a semiconductor structure comprising depositing a first metal-containing film above a substrate, wherein the metal-containing film comprises one or more metals. A second metal-containing film is deposited above the first metal-containing film, wherein the second metal-containing film comprises two or more metals. A masking layer is then deposited above the second metal-containing film. The masking layer is subsequently patterned such that a desired portion of the second metal-containing film is masked and an undesired portion of the second metal-containing film is exposed. Finally, the undesired portion of the second metal-containing film is removed with a solution comprising two or more chelating agents, wherein the solution does not impair the first metal-containing film. Neither Sasa nor Bojkov alone or in combination disclose such a method.

CONCLUSION

The applicants submit that they have overcome the Examiner's rejections of the claims and that they have the right to claim the invention as set forth in the listed claims. The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.


Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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4/10/06
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